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ILLINOIS COMMERCIAL SPRAY SCHEDULE

Apples, Peaches, Nectarines, Apricots, Plums, Pears, and Cherries

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SUPPLEMENT TO CIRCULAR 1151

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

COLLEGE OF AGRICULTURE

COOPERATIVE EXTENSION SERVICE

IN COOPERATION WITH ILLINOIS NATURAL HISTORY SURVEY

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APPLES

SPECIAL SUGGESTIONS

MATERIALS, RATE PER
100 GALLONS OF WATER
FOR DILUTE SPRAYS

APPLICATION AND PURPOSE

DORMANT TO GREEN TIP

Scale insects, aphids, and
red mites

SUPERIOR OIL, 2 gal.

Thorough coverage is the most important factor. Varieties susceptible to powdery mildew should be sprayed in dormancy so that a mildewcide can be used in 1/2-inch stage.

Scab

DIFOLATAN 4F, 3 qt. or 5 qt.

Application at the 5-qt. rate during silver tip but before 1/4-inch green should control scab until calyx (or about 6 weeks, depending on rainfall). Difolatan will not control mildew or the rust diseases; therefore, these diseases on susceptible varieties will need additional control measures beginning at pink bud. On these cultivars the 3-qt. rate or an alternate fungicide (see green tip) is suggested. Application later than 1/4-inch green tip will produce severe leaf injury.

Fire blight, black rot,
and blotch

COPPER SULFATE, 4 lb., or
8-8-100 BORDEAUX

Mostly for varieties susceptible to fire blight. Use the copper sulfate during dormancy; the bordeaux-oil is best at silver tip. Difolatan and bordeaux are compatible with superior oil at this time of year. Do not apply oil after a Difolatan spray.

GREEN TIP THROUGH TIGHT CLUSTER

Aphids

Systemic phosphate insecticide
— plus —

DODINE 65W (Cyprex), 3/8 to 1/2 lb.

— or —

DODINE 65W (Cyprex), 1/4 lb., and
Microfine wettable SULFUR, 5 lb.

— or —

DIKAR, 2 lb., and
TRITON B1956, 3 oz.

— or —

BENOMYL 50W (Benlate), 2 to 3 oz.,
and
CAPTAN 50W, 1 lb.

Pests tolerant to currently used pesticides are appearing. Therefore we recommend alternating pesticides during the spray program and using labelled pesticide mixes.

On varieties susceptible to powdery mildew use Dikar, benomyl-captan, or include sulfur with dodine. It is important to provide trees with protective fungicides at 7- to 10-day intervals throughout this period. Scab and mildew control must begin at green tip.

Wetting agents increase the effectiveness of Dikar against powdery mildew.

Use 2 oz. of benomyl for normal conditions and 3 oz. during severe scab pressure to deactivate scab. Never use benomyl alone. When benomyl is applied to deactivate scab lesions, combine it with protectant fungicides.

PINK BUD

Scab, powdery mildew,
cedar-apple rust

DIKAR, 2 lb., and
TRITON B1956, 3 oz.

— or —

BENOMYL 50W (Benlate), 2 or 3 oz.,
and

MANCOZEB 80W, 12 oz., or
POLYRAM 80W, 12 oz.

— or —

DODINE 65W (Cyprex), 1/4 lb., and
Microfine wettable SULFUR, 5 lb., and
a rust fungicide

If the 3-qt. rate of Difolatan was used, now is the time to apply additional scab sprays.

Rust control must start in this spray. Mancozeb (Manzate 200, Dithane M-45), Polyram, zineb, and ferbam are all good rust fungicides. Ferbam may affect fruit finish of Golden Delicious if used after calyx.

The control of white apple leaf hoppers and leaf miners is most effective at petal-fall. If fruit dimpling caused by tarnished plant bug is a problem, a carbamate insecticide or Pydrin is effective in the pink bud stage.

MATERIALS, RATE PER
100 GALLONS OF WATER
FOR DILUTE SPRAYS

APPLICATION AND PURPOSE

SPECIAL SUGGESTIONS

PINK BUD (continued)

Curculio, leaf roller

AZINPHOSMETHYL 50W (Guthion),
5/8 lb.

Only necessary if curculio or leaf roller is severe or if other chewing insects are present.

For fertilizing

SOLUBOR, 1 lb.

This prevents a deficiency of boron, which affects pollen germination. If ground applications of boron are made, eliminate foliar application. See Circular 1151.

EARLY BLOOM

Fire blight

STREPTOMYCIN, 50 or 100 ppm

On susceptible varieties start streptomycin at pink. Continue at 3-day intervals through bloom. Above 65° F. use 50 ppm; below 65° F., or when mixed with fungicides, use 100 ppm. Streptomycin uptake is enhanced by applying it as a dilute spray and by using spreader activators, such as glyodin, Regulaid, or glycerin, at 1 to 2 pints per 100 gal.

Scab, powdery mildew, and cedar-apple rust

Same as for PINK BUD

Fungicide applications are not recommended at full bloom as many injure pollen and may interfere with fruit set. During prolonged bloom, however, scab, mildew, and cedar-apple rust must be controlled. When simultaneous application of a fungicide and streptomycin is necessary, benomyl, captan, or glyodin should be used.

CALYX AND FIRST COVER

Codling moth, leaf roller, curculio, aphids

PHOSMET 50W (Imidan), 1 1/2 lb., or
AZINPHOSMETHYL 50W (Guthion),
5/8 lb.

Apply calyx spray when 3/4 of the petals have fallen, and first cover, 7 to 10 days later. Imidan may be weak for leaf roller control. For leaf hopper and leaf miner control, apply a phosphate insecticide that has had little or no past usage in the orchard or use a carbamate insecticide or Pydrin at a low dosage. Sevin and Vydate may thin fruit. Methomyl is safest on predatory mites. Vydate will also kill mites and leaf miners.

Scab, cedar-apple rust, blotch, powdery mildew, frog-eye, quince rust

— plus either —
POLYRAM 80W, 2 lb.
— or —

If the 5-qt. rate of Difolatan was used earlier, scab control fungicides must now be applied.

DIKAR, 2 lb., and
TRITON B1956, 3 oz.

Since Polyram will not control powdery mildew, choose another fungicide on mildew-susceptible varieties or combine a mildewcide (benomyl, sulfur, or dinocap (Karathane)) with Polyram.

BENOMYL 50W (Benlate), 2 or 3 oz.,
and

MANCOZEB 80W, 12 oz., or
POLYRAM 80W, 12 oz.

If quince rust has been a problem and the weather is wet, increase the rust fungicide to the full label rate.

Fire blight

STREPTOMYCIN, 100 ppm

Control blight in secondary bloom on susceptible varieties. The use of streptomycin after bloom for twig blight control is of limited value.

For thinning

See Circular 1151.

Summer varieties are best thinned at petal-fall. Fall and winter varieties are best thinned according to fruit size, preferably when king fruit is 10 to 11 millimeters in diameter.

For fertilizing

SOLUBOR, 1 lb.
UREA (45 percent N), 5 lb.

Add to the calyx spray if there is no ground application of boron. See Circular 1151. Use as needed in the first and third cover sprays. Do not use on Golden Delicious.

COVER SPRAYS (remainder of the season)

All insects, diseases, and mites

AZINPHOSMETHYL 50W (Guthion),
5/8 lb.

— plus either —
POLYRAM 80W, 1 1/2 lb.

— or —
DIKAR, 2 lb., and
TRITON B1956, 3 oz.

— or —
BENOMYL 50W (Benlate), 2 oz., and
CAPTAN 50W, 1 lb.

— or —
CAPTAN 50W, 1 lb., and
ZINEB 75W, 1 lb.

CALCIUM CHLORIDE, 2 lb. or 3 lb.

Bitter pit and Jonathan spot

As needed at 10- to 14-day intervals after the first cover. Alternate phosphate insecticides are phosmet (Imidan), phosalone (Zolone), malathion, parathion, or diazinon. Parathion and diazinon are outstanding for San Jose scale and spotted tentiform leaf miner. Red mites may need suppression through this period. Northern Illinois growers should be aware of apple maggot in late August. If cicadas are laying eggs, spray with carbaryl 50W, 2 lb. per 100 gal. water, every 7 days. Also use carbaryl for young grasshoppers in or near young orchards.

Rust and powdery mildew control should continue through third cover. Folpet (Phaltan), 1 1/2 to 2 lb. per 100 gal., should start at fifth cover if Botryosphaeria is serious.

On Jonathan and Red Delicious add 2 lb. calcium chloride per 100 gal. in the third, fourth, and fifth cover sprays, 3 lb. in later sprays. Limit applications of calcium chloride on Golden Delicious to a trial basis. For low-volume sprays apply 4 lb. per acre in the third, fourth, and fifth cover sprays and 6 lb. per acre in later sprays. Add the calcium chloride last when preparing sprays. See Circular 1151.

GROWTH REGULATOR SPRAYS

To increase "treeness" of Red Delicious

PROMOLIN, 1-1 1/2 pt.

To increase red color of Jonathan

ALAR, 1 lb. and
PROMOLIN, 1 pt.

To delay harvest

ALAR, 1 lb.

To advance harvest

ETHREL, 1 pint, and
NAA, 10 ppm, and
2,4,5-TP, 10 ppm

To prevent preharvest drop

See Circular 1151.

Apply 100 gal. of solution per acre when the kings are in full bloom or split the application, making one application at half rate when the kings are in full bloom plus another at half rate at petal-fall.

Apply 100 gal. of solution per acre 60 to 85 days before normal harvest date.

Apply 60 to 85 days before normal ripening date to McIntosh, Jonathan, and later varieties.

Apply one to two weeks before desired harvest date to Jonathan and spur-type Red Delicious. Apply as a dilute spray with thorough coverage. Stop-drop materials must be applied with Ethrel. Works well on apples previously treated with Alar.

Alar applied to delay harvest acts as a stop-drop preventative. NAA and 2,4,5-TP may be applied when apples start to drop.

PEACHES, NECTARINES, APRICOTS

DORMANT

Scale insects, red mites, leaf curl

SUPERIOR OIL, 2 gal., and
6-6-100 BORDEAUX

— or —

FERBAM 76W, 2 lb.

The oil controls scale and mites; the fungicide prevents the development of leaf curl. Thorough coverage in the fall or BEFORE buds start to swell in the spring is critically important for control of leaf curl.

Dichloro 50W, 1 lb., is also effective against leaf curl, but it is not compatible with oil.

PINK BUD

Tarnished plant bug, curculio, oriental fruit moth

AZINPHOSMETHYL 50W (Guthion),
5/8 lb., or
CARBARYL 50W (Sevin), 2 lb., or
METHOMYL L (Lannate, Nudrin), 1 1/2 pt.

Apply when buds show pink. Must not be applied when any blossoms are open, as this will kill honey bees. Azinphosmethyl is best for curculio. Pydrin is good for control of tarnished plant bug and stink bug.

APPLICATION AND PURPOSE

EARLY TO FULL BLOOM

Brown rot blossom blight

BENOMYL 50W (Benlate), 4 oz., or
THIOPHANATE-METHYL 70W (Topsin-
M), 8 oz., plus
CAPTAN 50W, 1 lb.

— or —

Microfine wettable SULFUR, 3 lb., and
DICHLONE 50W (Phygon), 1/4 lb.

— or —

FUNGINEX 18EC, 3/4-1 pt.

Try to make two applications, one in early bloom and one in full bloom. Do not use insecticides after first blossoms open.

Thiophanate-methyl 70W (Topsin-M) is a relatively new fungicide in Illinois. Its spectrum of activity is identical to that of benomyl and it therefore should be used with the same precautions as benomyl (see below).

Fungi tolerant to currently used fungicides (benomyl and thiophanate-methyl) are appearing. We therefore recommend alternating fungicides in the spray program and using suggested fungicide mixes. Never use benomyl or thiophanate-methyl alone or in combination with each other. Always combine them with protectant fungicides.

PETAL-FALL THROUGH COVER SPRAYS

Curculio, oriental fruit moth,
stink bugs, red-banded leaf
roller, and catfacing insects

AZINPHOSMETHYL 50W (Guthion),
5/8 lb., or
PHOSMET 50W (Imidan), 1 1/2 lb.

— plus —

Microfine wettable SULFUR, 6 lb.

Parathion and diazinon are alternative insecticides and are especially effective against San Jose scale. For terrapin scale control, either add Systox to the regular spray when needed or use diazinon.

Where peach scab has been a problem, continue sulfur or benomyl up to 40 days before harvest; after this period, another fungicide may be used. Sulfur and benomyl are the only fungicides that will control peach scab.

A complete application is needed about every 14 days through this period. Normally, insecticides are not used after the first 2nd-brood curculio spray. Watch harvest restrictions. See borer control section.

Mycoshield (oxytetracycline) should be applied on a strict 7-day schedule beginning at shuck-split and continuing until 3 weeks before harvest.

When warm, rainy weather prevails during early to mid-summer, bacterial spot may become serious. The combination of captan and dodine added to the cover sprays may help alleviate the problem.

Apply as a dilute spray with full coverage just before pit hardening, when the peaches loosen and can be mechanically thinned. Alar advances harvest 3 to 5 days and promotes uniform ripening.

Bacterial spot

MYCOSHIELD 17W, 150 ppm

CAPTAN 50W, 1 lb., and
DODINE 65W (Cyprex), 1/2 lb.

To advance harvest

ALAR, 1 1/2-2 lb.

PREHARVEST AND POSTHARVEST FUNGICIDES

Brown rot

BENOMYL 50W (Benlate), 4 oz., or
THIOPHANATE-METHYL 70W (Topsin-
M), 8 oz., plus
CAPTAN 50W, 1 lb.

— or —

FUNGINEX 18EC, 3/4-1 pt.

— or —

CAPTAN 50W, 2 lb., plus
BOTRAN 50W, 2 lb.

Brown rot becomes increasingly important as fruit begins to ripen; therefore, begin a 7-day spray schedule starting 4 weeks prior to harvest. Benomyl, captan, Funginex, dichlorone, and sulfur all control this disease. During hot weather, sulfur applied just before harvest may reduce fruit finish. Alternate fungicides and observe harvest restrictions.

Do not use more than three applications of Funginex to control fruit rot.

Botran is specific for *Rhizopus* rot and is best added to the hydrocooler water as a postharvest dip.

Rhizopus rot

APPLICATION AND PURPOSE	MATERIALS, RATE PER 100 GALLONS OF WATER FOR DILUTE SPRAYS	SPECIAL SUGGESTIONS
BORER CONTROL		
Peach borer, lesser peach borer, American plum borer	ENDOSULFAN 50W (Thiodan) 1½ lb., or AZINPHOSMETHYL 50W (Guthion), ⅝ lb., or CHLORPYRIFOS 4E (Lorsban), 1½-2 pt.	Make two to four applications but adhere to harvest restrictions on the different varieties. July and August are the critical months. Thorough coverage of all wounds and gummy areas of all major branches is essential. This spray must be applied with a hand gun instead of the mist-blower type sprayer. Chlorpyrifos (Lorsban) should be applied to peach tree trunks up to scaffold limbs.
PLUMS		
DELAYED DORMANT		
Scale insects, red mites, black knot	SUPERIOR OIL, 2 gal.	Apply before buds begin to open. The oil controls scale and mites. Prune out and burn all black knots during the dormant period.
PETAL-FALL THROUGH SECOND COVER		
Curculio, brown rot	AZINPHOSMETHYL 50W (Guthion), ⅝ lb. — plus — BENOMYL 50W (Benlate), 4 oz., plus CAPTAN 50W, 1 lb. — or — CAPTAN 50W, 2 lb.	Apply a spray every 10 to 14 days for three times, starting at petal-fall. Add a miticide if needed. For borer control follow the suggestions given under peaches. Alternate fungicides during the spray program. Dichlorone (Phygon, Quintar) will provide excellent control of brown rot blossom blight. Thiophanate-methyl 70W (Topsin-M) can be substituted for the benomyl.
ADDITIONAL COVERS		
Brown rot	BENOMYL 50W (Benlate), 4 oz., plus CAPTAN 50W, 1 lb. — or — CAPTAN 50W, 2 lb.	Start these sprays about 3 weeks before harvest and apply about every 7 days. Alternate fungicides during the spray program.
PEARS		
DELAYED DORMANT		
Pear psylla, scale insects, leaf spot	SUPERIOR OIL, 2 gal., and FERBAM 76W, 2 lb.	Apply just before buds begin to open.
BLOOM		
Fire blight	STREPTOMYCIN, 100 ppm	Three sprays 3 days apart, starting with the first blossoms. May be applied during the day for effective control. Be sure to continue on late blossoms. See early bloom section under apples.

APPLICATION AND PURPOSE	MATERIALS, RATE PER 100 GALLONS OF WATER FOR DILUTE SPRAYS	SPECIAL SUGGESTIONS
CALYX THROUGH COVER SPRAYS		
Codling moth, curculio, leaf spot, scab	AZINPHOSMETHYL 50W (Guthion), $\frac{5}{8}$ lb. — plus either — CAPTAN 50W, 1 $\frac{1}{2}$ lb., or FERBAM 76W, 1 $\frac{1}{2}$ lb.	Start calyx spray as soon as the petals have fallen and continue at 12- to 14-day intervals for at least 3 covers. Later, apply azinphosmethyl alone if psylla nymphs are visible on water sprouts.
CHERRIES		
DORMANT		
Scale insects	SUPERIOR OIL, 2 gal.	Apply before the buds open.
FIRST AND SECOND COVER SPRAYS		
Brown rot, cherry leaf spot, curculio, slugs	AZINPHOSMETHYL 50W (Guthion), $\frac{5}{8}$ lb. — plus either — CAPTAN 50W, 2 lb. — or — WETTABLE SULFUR, 6 lb. — or — DICHLONE 50W, $\frac{1}{2}$ lb.	Start right after the shucks have fallen with the first cover. Apply a second cover spray 10 days later. Alternate fungicides during the spray program.
ADDITIONAL SPRAYS		
Cherry leaf spot	DODINE 65W (Cyprex), $\frac{1}{2}$ lb., or CAPTAN 50W, 2 lb.	Apply immediately after harvest. One or two sprays should be adequate. Spray more if there is more evidence of yellow leaf. A phosphate insecticide may be needed if insects attack leaves. Borers should be controlled as suggested for peaches. Alternate fungicides during the spray program.
See the section on peaches, nectarines, and apricots for suggested borer sprays.		

MITE CONTROL: It is important to avoid using insecticides that are toxic to predatory mites. If phosphate insecticides will kill plant-feeding mites, they will also kill predaceous mites. Miticides, however, may be more selective, and the following miticides can be used without killing predatory mites: DICOFOL (Kelthane), OMITE, OVEX, PLICTRAN, TETRADIFON (Tedion), and VENDEX. The miticide OXYMAL (Vydate) will kill all mites. Some fungicides, such as DIKAR and DINOCAP (Karathane), give mite suppression and allow good predatory mite survival. BENOMYL (Benlate) suppresses both types of mites. Where red mites have been a problem, use oil in the dormant spray.

RESTRICTIONS ON PESTICIDES USED ON TREE FRUITS: The following restrictions are those in effect as of December 1, 1982. Growers are urged to follow directions on the manufacturer's current label at all times. When mixing several pesticides in the same tank, use the time restriction with the longest interval.

Pesticide	Number of days between last application and harvest					Number of days between last application and harvest				
	Apples	Pears	Cherries	Peaches	Plums	Pesticide	Apples	Pears	Cherries	Peaches
Benlate (benomyl)	0	0	0	0	0	Mycoshield (oxyltracycline) .....	...	...	...	...
Bordeaux	0	0	0	0	0	Omite	7D	7D	...	21
Borlan .....	...	...	1H	1H	8	Ovex .....	...	...	...	14C
Caplan	0	0	0	0	0	Parathion	14	14	14	14
Copper sulfate	0	0	...	...	...	Phaltan (folpet)	0	...	...	...
Cyrex	7	7	0	15	...	Phosphamidon	30	...	...	...
Diazinon	14	14	10	20	10	Phygon (dichloro)	1	...	3	...
Difolatan	A	A	...	...	...	Plictran	14E	14E	...	7
Dikar	30	21	...	...	...	Polyram	30	...	...	E
Dithane M-45 (mancozeb)	30	21	...	...	...	Pydrin	21F	A	...	14G
Ferbam	7	7	0	21	7	Quintar (dichloro)	1	...	B	7
Funginex .....	...	...	...	0	...	Sevin	1	1	1	1
Glyodin	0	0	7	...	...	Streptomycin	50	30	...	...
Guthion (azinphosmethyl)	15	15	15	21	15	Sulfur	0	0	0	0
Imidan	7	7	7	14	7	Systox	21	21	...	30
Karathane	21	21	...	45	...	Tedion	0,E	0,E	0,C	0,C
Kelthane	7	7	7	14	7	Thiodan .....	...	...	21C	30C
Lannate, Nudrin (methomyl)	8	...	...	4	...	Thiram (thylate)	0	...	...	7
Lime sulfur	0	0	0	0	0	Topsin-M	0	...	1	1
Lorsban	A	A	...	14	A	(thiophanate-methyl)	0	...	...	...
Malathion	3	3	3	7	3	Triethion	30	30	...	...
Manzate 200 (mancozeb)	30	15	...	...	...	Vendex	14D	14D	...	...
Mesural .....	...	...	7D	21E	...	Vydate	14	...	...	...
						Zineb	30	7	...	30

... Not recommended.

A. Dormant application up until 1/4-inch green.

B. Do not apply when fruit is present — apply prebloom or postharvest.

C. Not more than 2 applications to fruit.

D. Not more than 3 applications to fruit.

E. Not more than 4 applications to fruit.

F. Not more than 2.1 lb. active ingredient per acre per season.

G. Not more than 1.5 lb. active ingredient per acre per season.

H. Can be used as a fruit dip.

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